Sub A4

CLAIMS

1. A water-based composition for sealing or consolidating rock, mantle rock or soils in contact with water containing Ca^{2+} ions, the composition containing 2 to 40% by weight of SiO_2 (dry matter, based on the composition) in the form of an aqueous silica sol, characterized in that it contains hardness stabilizers from the class of inorganic polyphosphates, phosphonic acids, aminoethylene phosphonic acids, phosphoric acid esters, phosphonocarboxylic acids and polycarboxylic acids or mixtures of these substances in concentrations of 0.01 to 400 ppm.

2. A composition as claimed in claim 1, characterized in that the hardness stabilizers are selected from the group consisting of aminotris(methylenephosphonic acid), 1-hydroxyethane-1,1-diphosphonic acid, phosphonobutane tricarboxylic acid, polyacrylic acid or mixtures of these compounds.

3. A composition as claimed in claim 1 or 2, characterized in that it contains the hardness stabilizers in concentrations of 0.1 to 200 ppm and preferably in concentrations of 1 to 100 ppm.

4. A process for sealing or consolidating rock, mantle rock or soils in contact with water containing Ca^{2+} ions, in which the material to be consolidated or sealed is contacted with a solution containing aqueous silica sol and hardness stabilizers from the class of inorganic polyphosphates, phosphonic acids, aminoethylene phosphonic acids, phosphoric acid esters, phosphonocarboxylic acids and polycarboxylic acids or mixtures of these substances.

5. A process as claimed in claim 4, characterized in that aqueous silica sols containing 20 to 60% by weight of SiO_2 and preferably 25 to 50% by weight of SiO_2 (dry matter, based on the aqueous sol) are used.

6. A process as claimed in claim 4 or 5, characterized in that the hardness ions are added in such quantities that their concentration in the aqueous silica sol solution is between 0.01 and 400 ppm, preferably

between 0.1 and 200 ppm and more particularly between 1 and 100 ppm.

7. A process as claimed in any of claims 4 to 6, characterized in that the material to be consolidated or sealed is in contact with water having a concentration of Ca^{2+} ions of more than 2 mmol/l

8. A process as claimed in any of claims 4 to 7, characterized in that it is used to seal underground formations, preferably wells.

9. A process as claimed in any of claims 4 to 8, characterized in that the consolidating or sealing effect begins 30 to 60 minutes after contacting of the composition with the material to be consolidated or sealed.

10. The use of the compositions claimed in any of claims 1 to 3 for sealing or consolidating rock, mantle rock or soils in contact with water containing Ca^{2+} ions.